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THE HORN SPEAKER

Audio Amplifiers in Talkie Roles

A review of the recent ingenious developments in the linking up of sight and sound reproduction.

By R. D. WASHBURNE

NUMEROUS past issues of RADIO-CRAFT have contained articles discussing the design, construction and use of power amplifiers and associated equipment, from the standpoint of the radio Service Man, the design engineer, and the experimental constructor. It is now time to illustrate, by practical examples, the manner in which these numerous phases of developments in the electronic field are being commercialized, both by manufacturers and by the wideawake radio man who keeps in contact with the consumer.

As far back as July, 1929, the second (August) issue of RADIO-CRAFT first described a successful, commercial design of home talking-picture machine (the "Home Talkie"). This magazine has constantly taken an active interest in the progress of equipment design tending toward the perfection of a union between high-grade audio amplifiers and the associated sound equipment (phonograph pickups, recording heads, turntables, microphones, radio chasses, sound-film apparatus).

In Fig. A is illustrated a late instrument design, which attracted considerable attention at the radio Trade Show in Chicago this summer, (and which should arouse equal or greater interest at the Trade Show in New York City, scheduled for the early part of September).

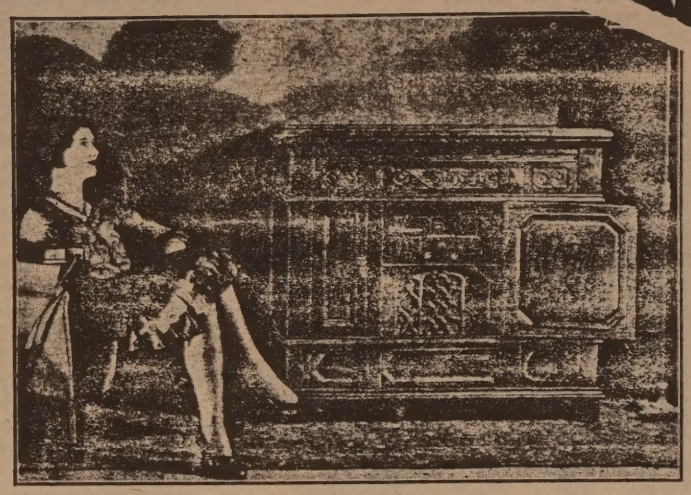

Fig. A
The projector lens of this RCA Victor combination appears at the right of the horizontal tuning scale.

In the final analysis, we find that, although it lists for close to a thousand dollars, its complexity lies more in the imagination of the observer than in the machine. It incorporates talkies, an automatic record changer, a recorder, a microphone, and a radio receiver (with tone control, remote tuning control, late-model superheterodyne chassis, and twin-reproducers).

The writer feels that there lies, almost totally dormant at the present moment, a tremendous market for an instrument combining these features in manners particularly suited to individual localities.

"Sound" in Schools

The following enlightening statements of Mr. William S. Paley, President of the Columbia Broadcasting System, is quoted from Martin Codel's book, *Radio and Its Future*:

"During the summer of 1929, the Secretary of the Interior, at the request of the department of Superintendence, appointed a commission to study the educational possibilities of the radio. The stage was thus set for a new era of progress."

And again:

"Educational radio will do much for one-room rural schools. There are now in the United States 160,000 one-teacher schools which give instruction to more than six million young people. Several million more are in small rural or town schools. As an experiment and research reveal the most effective educational uses of radio, there will grow up a system of broadcasts to serve the schools throughout the nation.

"No one need think that it will be easy to harness radio for the schools. It is a hard and difficult problem. But, inescapably, this new tool of learning will find its place in the schoolroom and in the home."

(A more intimate light on the possibilities of school radio is found in *Radio in Education*, by Armstrong Perry. See also, *This Thing Called Broadcasting*, by Goldsmith and Lescarboura.)

A concrete aspect of this virgin field is found in the figures which indicate that there are more than 250,000 school buildings in this country of ours, having a daily attendance of over 20,000,000 students. Couple this with the fact that the average county school being put up today costs about $250,000, to properly take care of a thousand or more pupils; and it is seen that a few hundred dollars more or less, the cost of some form of sound equipment, can make little difference in the financial budget.

It now remains to prove that sound equipment will make a *great* difference in raising educational standards. This the writer will attempt by clearly showing the merits and adaptations of various types of newly developed sound devices; while at the same time pointing out additional (and perhaps primary) uses.

Classifications

Preparatory to listing the classes, into which fall the various circuit and instrument designs, there may be in order an explanation of the nomenclature.

"Talkies" are talking motion pictures; whether the synchronized sound is on disc or film. "Automatic" phonographs are equipped with mechanisms which cause the disc records to be exchanged automatically. "Pre-pay" instruments include a coin device which controls the operation. "Portable" units are designed with particular regard to

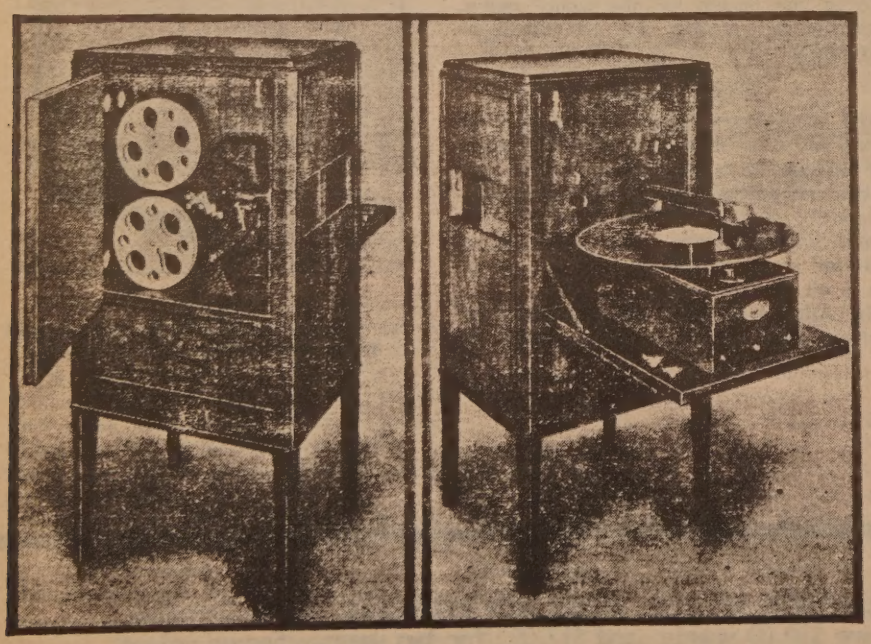

Fig. B **Fig. C**
The "Consolette," the projector, on the left, with the control panel inset beneath it. In the view of the right side, the synchronous turntable in position; observe its large size.

Around the Dial

By THE DIAL TWISTER

FINDING OLD SETS

After gaining a little experience, we soon realize that resourcefulness with a little luck will unearth a lot of radios. For instance, Paul Randle, a collector who likes to enhance his bookself display with early crystal sets of different sculptured forms, was so thorough in spreading the word of his desire for old sets that he, after covering flea markets, auctions and other regular methods, went to every worker who wrecks old houses to be on the look out for old radios.

Paul was driving by an old house being dismantled with the usual squeaking boards that were nailed together from 1915 to 1925 being pulled apart. Out by the curb, separated from the resaleable building material, there were some old items, waiting to be picked up by the garbage department. Looking at a pile of junk, he saw something he often wish he could find in the VINTAGE RADIO book by Morgan McMahon. It was a Howe crystal set. He picked it up and then he saw a Kennedy 220. He decided to save the sanitation department some work and haul off the junk— especially before someone hollered, "What do you think you are doing?" The sets were sitting there just like the way people now throw away old televisions. Paul got them free and rescued them from probable extermination.

(Continued on page 2)

Dial

After putting the sets in his car for safe keeping, he found the house wrecker and explained to him about an interest in collecting old radios. Later, the house wrecker called Paul to tell him about some old radios that were discovered in another old house. Of course, the wrecker seeing the chance became rather mercenary, but really not unreasonable about a price, so Paul Randle, the collector, gained some more prizes for his collection.

OLD RADIO SHOWS AND THEIR CLUBS

Jay Hickerson, who always wants anyone "to write if they get work and hang by their thumbs," has sent us a list of old radio clubs. Here are a few: Vintage Broadcast Society, Radio Collectors of America, Golden Radio Buffs. etc. These will be listed in THE HORN SPEAKER under "Social Events" during the remainder of the year. Jay wrote in his publication, HELLO AGAIN, "The GRAND OLE OPRY celebrates its 60th anniversary on November 28th. It has been broadcast continuously since 1925 over WSM-AM in Nashville. Roy Acuff has performed with it 47 years."

A VCR POPULAR TO TAPE RADIO SHOWS

The cost of video tape is now so low and the video cassete recorders so convenient, many enthusiasts are now using the VCR medium to record and play back old radio shows.

ALWAYS GLAD to hear about any ideas to make our hobby more fun. Happy collecting, Jim.

compactness, lightness, and portability. "Combinations" incorporate two or more distinct functions. "Non-sync." devices provide for sound (such as incidental music or microphone announcements) which is not synchronized with the picture.

Following is a list of nearly all the combinations at present available as commercial devices; of course, it is possible to combine these units, within certain limits, to obtain a particular effect:

Home Talkies;
Industrial Talkies;
Advertising Talkies;
Non-Sync. Talkies;
Talkies and Radio;
Radio-Phono. Combinations;
Automatic Phonographs;
Pre-Pay Automatic Phonographs;

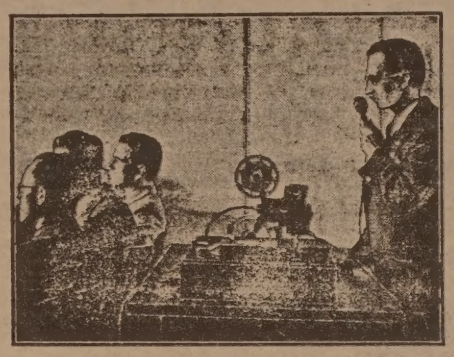

Fig. D
The lecturer is using a microphone with the portable "Filmophone" to explain the film.

Pre-Pay Automatic Recorders;
Midget Radio-Phono. Comb.;
Special Combination: Talkies, Automatic Phono., Recorder, Radio (with remote-control), tone-control, and twin reproducers).

"Home" talkies is a misnomer; for there is nothing to prevent a "home" talkie being used in a school, or in any other public or private institution. The only limit is the size of its audience; which is, mostly, a matter of the camera-to-screen distance and the projector-lamp's power. In general, though, exceptional care is taken in the cabinetry of talking motion-picture machines designed for milady's home.

A particularly fine example of sound engineering and woodcraft is the "Consolette" Home Talkie, "No. 750 C," illustrated in Figs. B and C. It is a product of the Pacent Electric Company, and one of the most refined instruments of this type developed to date.

As the cabinet top is immovable, it may be permanently trimmed. The front left panel slides (in steel springs and felt, to prevent vibration) to the right, exposing the projector. A door on the left side of the cabinet, Fig. B, presents the projector for adjustment; but is closed during projection. The door on the right side, Fig. C, during the "show" is in the convenient position shown, for exchange of records, etc.

The projector is equipped with a motor-driven rewind; silent claw intermittent; silent, high-torque induction motor (common to projector and turntable); special gear box to insure absolute synchronism; helical micarta gears; automatic framing device; automatic light trap, to prevent injury to film. The projection speed of the 16-mm. film may be switched from 16 frames per second to 24; smooth projector motion has been adopted to eliminate film flicker; a 165-watt lamp makes available a picture measuring 6 x 8 feet, although a collapsible screen measuring 3 x 4 feet, or a special one, 26 x 34 inches, is available.

The turntable rotates at 33 1/3 r.p.m., regardless of projector speed; a 16-in. tone-arm pickup is used; equipped for silent or sound picture projection, and non-sync. (incidental) or synchronous sound. The midget reproducer is removable, for placement near the screen during large image projection. This amplifier uses one each of types '24, '45, and '80 tubes (volume controls appear in Fig. B, underneath the projector).

Films Available

About eight concerns are producing film reels in the 16-mm. or "home-movie" class. These films, of which there are available more than 2,000 subjects (comedy, educational, feature, sporting, travel and special), are rapidly becoming available to the home projectionist through the process of "rotation."

Circulating *book* libraries (usually in stationery stores) are familiar to everyone, and the few cents they cost us, per week, is a small charge for the benefits we derive. Circulating *film* libraries, at our favorite radio supply house, will afford even greater

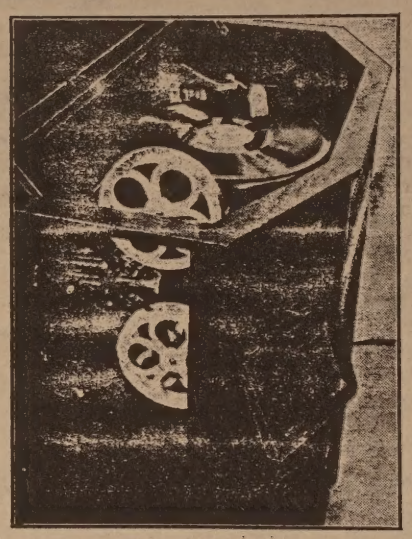

Fig. B
The Filmophone is shown in a console, with radio combination, for home or auditorium

pleasure and education; and, films thus being available at low cost, should be profitable to the dealer for the same reason. Film libraries already are established in many cities.

Industry Speaks

The U. S. Navy, Army, and Bureau of Mines, and many manufacturers, have available 16-mm. films, illustrating various activities and processes, which are lent gratis. "Miniature Movies," official organ of the 16-mm Motion Picture Board of Trade, is dedicated to the promotion of this type of film in all its uses.

Mr. Allen Mogensen, assistant editor of *Factory and Industrial Management*, is quoted as follows: "Movies offer one of the most effective methods yet discovered of eliminating waste motion in factory production."

As a matter of interest it may be remarked that, where impromptu or incidental sound is to be employed (non-sync. operation), an ordinary hand movie camera may be used with perfect satisfaction for the taking of industrial pictures. One method used by Bell & Howell experts for obtaining a time-check of mechanical operations is to arrange a standard stop-watch on the front of the camera, so that its time indication appears in one corner of the finished picture.

Clearly, movies can be used to cut down manufacturing costs by affording a means of detecting waste motion in factory operations; this is done most successfully by means of a camera which functions at the rate of 1,000 to 4,000 frames per minute. The completed film is studied by industrial engineers, who detect and correct procedure which is seen to be faulty. Factory workers may gather from this that they may be compelled to work harder. This is erroneous. In fact, it has been proven, (and recently demonstrated to The Society of Industrial Engineers), that, after cutting down waste motion portrayed on the "miniature movie" screen, the production of a worker can be increased *and, at the same time,* unnecessary fatigue reduced—*more* work is done *more easily,* than a lesser amount previously.

Synchonized records may be prepared at the same time, or the sound may be "dubbed" in at leisure. (Details of recording procedure have appeared in the "Home Recording" department of RADIO-CRAFT).

Still another way of handling such educational films is to run the picture "silent," except for pertinent, impromptu remarks, or synchronized sound interspersed with running comments; both of which effects are accomplished by means of a hand microphone and a cut-in switch or "fader." In Fig. D the factory representative is shown breaking into a talkie to give to a group of district sales managers an oral explanation of an illustration. These managers, in turn, may use the same procedure later in addressing a "pep" meeting of salesmen.

In Fig. E is shown a close-up of the Bell & Howell "Filmophone-Radio"; which in part, as the "Filmophone" portable, appears also in Fig. D and, when equipped with the new 375-watt Filmo lamp is said to fill a

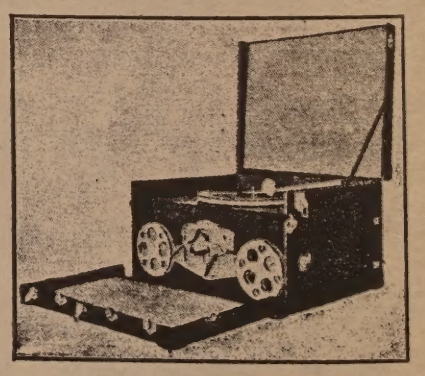

Fig. F
The "Talkiola" portable in its carrying case; it also handles large (16-in.) records.

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16-foot screen (90-ft. projection), and may be heard throughout a filled theater of over 2,000-seat capacity. This is something "to write home about."

A separate microphone connection permits the operator to make extemporaneous remarks. A single motor turns projector and turntable in synchronism. The portable instrument is of the two-unit type, the total weight being 88 lbs. One unit case measures 25 x 17 x 8 in. (approx.); the other, 25 x 19 x 7 in. (approx.). The audio amplifier is of a high-gain type, and includes two '27s, two '45s in push-pull, and an '80 rectifier.

One case contains a Filmo 16-mm. projector, three extra reels of film, empty reel, connecting cords, cables and accessories, and the reproducers; the second, the turntable and coupling shaft, magnetic pickup, power amplifier, tubes, needles, and has provision for 16-inch records.

The Filmophone-Radio, Fig. E, incorporates radio, talkies, and electric phonograph.

The turntable is rotable either at ordinary phonograph speed, at 33 1/3 r.p.m. for talkies. The films may be run silent, synchronized, or non-sync. A Howard radio chassis is used.

The "Talkiola"

In Fig. F is illustrated the "Talkiola Portable," manufactured by the Talkiola Corporation; and most of the technical data concerning it are applicable also to the "Talkiola."

The projector handles 16-mm. film, a "noiseless" mechanism being used. Projection is upon a transparent screen; which may be as large as 7 x 9 feet, for a focal length of 25 feet, with the standard 250-watt lamp. A 1/20-h.p. A.C. motor drives both the projector and turnable; which start immediately in synchronism.

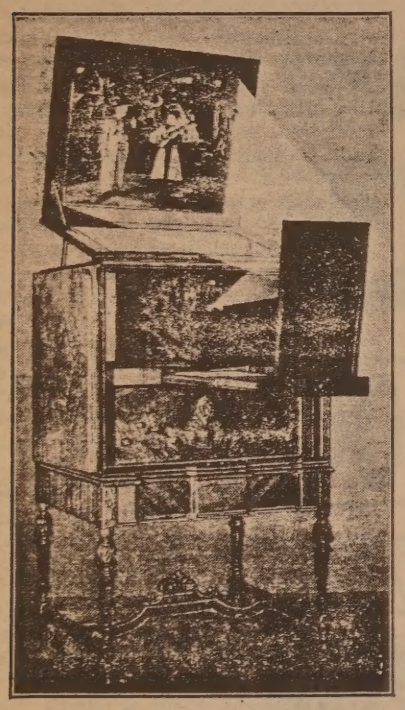


Fig. G

The "Visionola" contains its own screen, utilized in the manner shown for compactness.

A turntable speed of 33 1/3 r.p.m. is available for standard picture records, and, for domestic records, 78 r.p.m. (lever shift).

The power amplifier employs a type '24 tube and push-pull '45's, with an '80 rectifier. The dynamic reproducer is portable within the limits of a 25-foot cable. A microphone may be plugged into the circuit for announcements.

The "Talkiola Portable" weighs 80 lbs., complete with screen, and measures 23 x 18 x 14 in. in height.

The home model, the "Talkiola" secretary, incorporates also a radio set and is characterized "the miniature theatre in your home."

The "Visionola" and "Visivox"

Another instrument designed particularly to enhance and entertain in the home is the "Visionola," ("—that brings to your

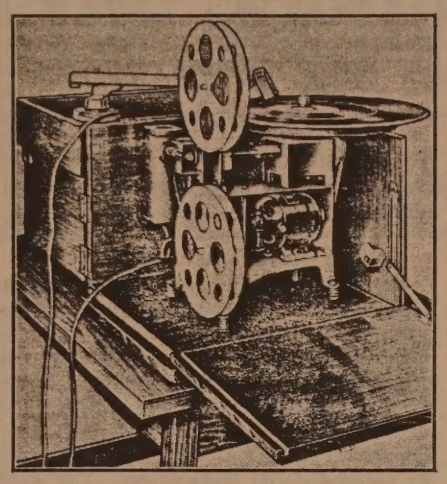


Fig. H

The portable "Visovox" may be plugged into any radio receiver to use its audio end.

living-room the whole wide world of entertainment.") which is illustrated in Fig. G, (It is manufactured by Visionola Mfg. Corp.), and a good idea of the appearance of the "Model C660" instrument, open for adjustment, threading of film, etc., and closed, is obtained.

The phonograph mechanism is in the top of the cabinet; the radio chassis is beneath the projector. A standard Columbia "Screen-Grid 8" chassis is used. The audio channel of this receiver, which is of particular interest, is schematized in Fig. 1; this shows the manner in which most radio-talkies combinations are wired. Microphones may be wired-in, in a number of different ways, depending upon the individual audio circuit, and the characteristics of the microphone.

Equipment classed as accessories, and required for operation of the Visionola, are as follows: one G.E. "Type T10 Prefocus," 200-watt projection lamp; one G. E. "Type T8," 15-watt intermediate screw-base pilot lamp; three type '24, two type '27, two type '45, and one type '80 tubes; antenna and ground installation materials.

One lever controls the projector for sync., non-sync. or rewind; another adjusts the framing. Four more, on the receiver panel, control radio tuning, off-on, tone, and volume, and talkies and plain phonograph volume.

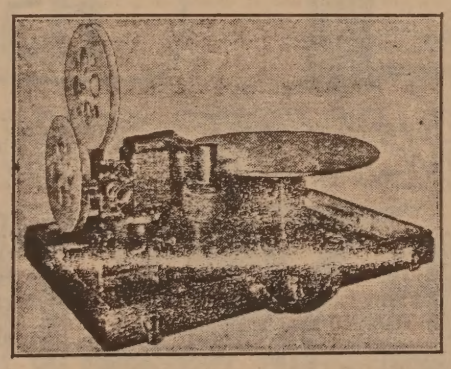


Fig. I

The "Cinetone," especially intended for industrial and scientific use, is assembled on its carrying case as shown.

Projection is obtained by reflection upon a screen; this makes for compactness.

In Fig. H is shown the "Visovox" in the open position of the "Model A" portable 16-mm. talkie; it is manufactured by Sprague Specialties Company. (A pretentious console Model C is not illustrated.)

A feature of the "Model A Visivox" is the manner in which it derives its audio amplification. One plug connects to the light-line, for motor power; and a second plugs into an existing radio set, thus connecting the pickup of the Visivox to the amplifier and reproducer system of the radio set. Where no radio set is available, the "Model B" unit, incorporating the required amplifier and reproducer, is used.

The "Model C" unit also projects upon a screen, and comprises the projector, phonograph mechanism for 16-in. records (for sync. or non-sync. operation with or without the projector), amplifier, and reproducer.

Industrial-Type Talkies

The "Industrial Cinetone" manufactured by Q.R.S.-DeVry Corporation, and illustrated in Fig. I, is another portable talkie; the sale of which, however, at the present time is mainly in the industrial and scientific fields.

A large reel permits running a 28-minute show (800-ft. reel); with sync. sound on 33 1/3 r.p.m., 16-in. records. A 250-watt lamp results in clear pictures up to 60-foot projection. Amplifier and reproducer are mounted with the projector on the base of the carrying case.

The scientific aspect is gleaned from the following words of Mr. T. M. Pletcher, president of the company. "The inestimable good of having talking motion-picture equipment, with which to portray surgical operations for students of medicine and surgery,

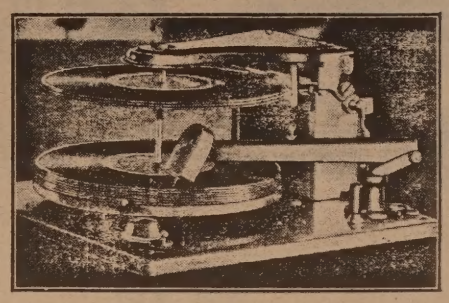


Fig. J

The Capehart "10-12-C" automatically changes ten records to playing position; the last repeats until it receives the operator's attention.

can be readily recognized. On the other hand, actual talking motion pictures, taken in the field of industry and accurately presented to laymen as well as to engineering groups, have a value that cannot be measured in dollars and cents. . . . It (the "Cinetone") is something that will revolutionize the method of showing the world how science and industry perform—*and actually tell about it at the same time.*"

Midget Combination

"Lady, play your — radio-phonograph" may become a rather common request, if manufacturers follow the lead of the Cardinal Radio Manufacturing Company, which originated the particularly neat and compact midget radio-phonograph illustrated and described on page 238.

The adaptation of this small-space combination instrument to use in conjunction with an ordinary 16-mm. movie projector should be obvious (for instance, as an aid in the study of languages, where the filmed motions of the mouth in pronunciation are accompanied by verbal explanations via the electric phonograph).

There are now available several models of "pre-pay" instruments. Most of them are of the electric-phonograph type, and operate when a coin is put into the machine. In general, they incorporate a standard power amplifier, phonograph pickup, turntable and motor, and the reproducer; the only distinction being in the cabinet design, the inclusion of a simple coin-operated switch which closes the power circuit during the playing of a record, and a mechanism for exchanging the records.

For dance halls, restaurants, and other places where continuous sound programs are desired, substantially the same equipment, minus the coin-control, is used. In these installations the record-changer ordinarily operates automatically to play either or both sides of a large number of records (perhaps 15) consecutively; and then, either reset automatically or to require manual resetting.

Home Record-Changers

In most instances, the record-changer in these big commercial jobs is an integral part of the construction and therefore not available to the technician who would incorporate automatic change of records in a sound installation of his own. Under these conditions a separate record-changer, distinct from every other part of the equipment, becomes desirable; and now is available in several makes. A particularly compact record-changer, designed by a firm which has specialized for a number of years

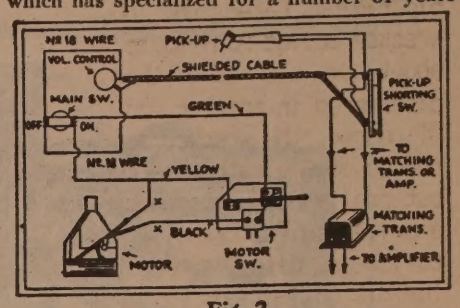


Fig. 2

The system of the record-changer shown in Fig. J; any record may be selected for playing at any time.

in the perfecting of these devices, is the new "Capehart" record-changer, "Model 10-12-C," shown in Fig. J. It is manufactured by The Capehart Corporation, long makers of domestic and commercial electric phonograph and radio-phonograph combinations.

Both 10- and 12-in. records can be played,

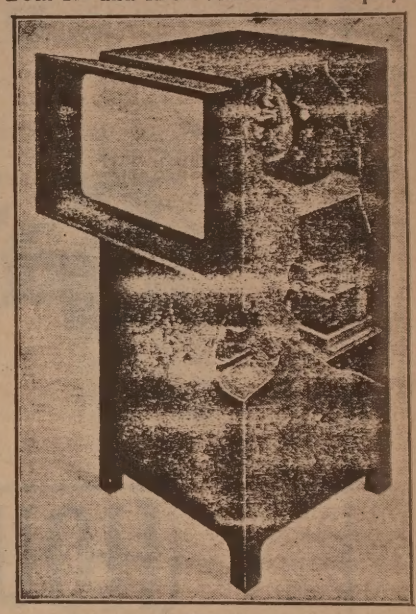


Fig. L

The "Auto-Cinema" adds speech to the familiar advertising movies; the sound is on the endless film.

changed, and turned over. With a special switch one record can be placed on the turntable, the adjustment set according to the size of the record and the magazine loaded while the pickup automatically comes into position and the first record is being played. The magazine of this model holds 9 records; the playing time, therefore, may be up to 45 minutes. Control connections are as shown in Fig. 2.

The Capehart record-changer may be used in conjunction with a radio set or a motion-picture projector. The latter arrangement calls for non-sync. operation (incidental music, or home-recorded commentaries); since the rotational speed is 78 r.p.m., the standard for domestic records, and there is no provision for coupling the turntable to the projector. The record-changer is provided with a reject device, record unloading lever, volume control, and master switch.

Consider the application of these units; they now are installed, to name a few instances, in the following places: In automobiles, as part of "sound trucks" for advertising purposes; on merry-go-rounds; in

yachts; on warships; at bathing beaches; in tourist camps; in hotels, inns, etc.

Portable Amplifiers

In addition to the 46 uses of audio systems listed on page 122 of the August, 1930, issue of RADIO-CRAFT, we may add the following: armories, auctions, banks, colleges, gymnasiums, lecture rooms, lodges, prisons, steamships, steamship terminals, yachts, stock and trade exchanges, theatres and civic centers.

Demonstrations to prospects of a sound installation, or the use of a sound system under the conditions of temporary operation, are conveniently met by means of the twin-unit public address system shown in Fig. K. This illustrates the "Model 101-A" portable public address system, manufactured also by Electrad, Inc. (Several other models are available.)

Features of the "Model 101-A" portable

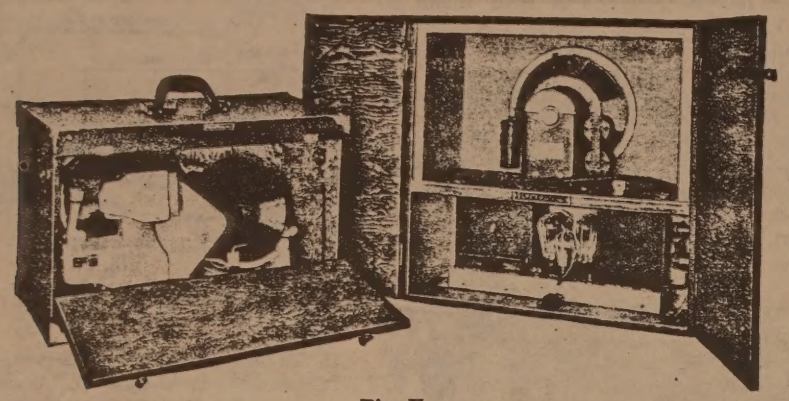


Fig. K

The two units shown compose the Electrad "Model 101A" portable public-address amplifier, arranged for convenient transportation. A record-changer for phonograph programs, and a dynamic reproducer are parts of the equipment.

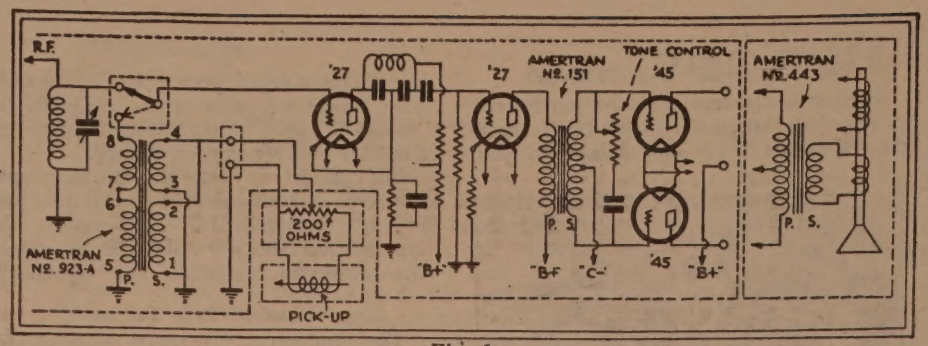


Fig. 1

The audio channel of the Columbia receiver, used as the amplifier of the "Visionola"; the connections are typical of radio-talkie practice.

Advertising Talkies

The police of many cities have been bothered with the traffic problem that arises when good fellows get together—to gaze with rapt attention at an advertising motion picture; this problem should become worthy of special consideration when the new *advertising talkie*, of which the "Auto-Cinema" illustrated in Fig. L is an example, makes its appearance on Main Street. The Auto-Cinema is a product of the combined efforts of the Auto-Cinema Corporation and RCA Photophone, Inc.

A feature of this innovation in the advertising world is the device for obtaining continuous rewind of the endless film, which contains both picture and sound. A standard photoelectric cell is used for the sound pickup.

A floor space two feet square is sufficient for this advertising talkie. The pictures appear on a transparent screen measuring 18 x 22 in. The complete cabinet, which public-address system are as follows: automatic record changer, playing 20 records, with automatic repeat; auditorium-type dynamic reproducer. The type C-250 power amplifier uses one '24, one '50, and one '81 tube (undistorted power output, 4.9 watts; current consumption, 85 watts); carrying cases, plywood, leatherette-covered.

weighs less than 100 lbs., is 5½ ft. high; within it are included the projector, amplifier, motor, and 6-in. reproducer. Money-making uses for the instrument were clearly stated by Mr. Sydney E. Abel, general sales manager of RCA Photophone, Inc., as follows: "For the motion-picture theatre it (the Auto-Cinema) should be particularly essential. Placed in the lobby of the theatre, the new projector would maintain a continuous performance in the sound reproduction of advance trailers, or selected sequences from current attractions. It is our opinion, however, that advertisers of standard products of every description will find the projector a great medium. Conveniently placed in hotel lobbies, railroad stations, auditoriums, department stores for style exhibitions or, in fact, in any place where crowds congregate, it would be bound to attract interest and attention."

Once again we pay our respects to Dr. DeForest, originator of the vacuum-tube audio amplifier (recollection of the thrill that was felt when the technical journals announced his success in obtaining "cascade amplification" still is vivid); even though, in 1922 he remarked, concerning his "Phonofilm," or sound-on-film, "——it probably never would come out of the luxury class, since the special machine required will cost at least $1,500 and film records from $20

Radio Coat for Fighting Men

by S. R. WINTERS

The Radio Coat is more than a novelty. It may be developed into a formidable weapon for fighting men. Radio circuits are withheld.

A COMPLETE radio broadcasting and receiving station quilted into a coat is the invention of a Chicago man—Berkey E. Cover, Sr. By uplifting the left arm, the wearer of this unique radio garment may conduct a two-way conversation, thus becoming a walking-talking broadcasting station. Self-contained, the unit includes microphone, receiver, transmitter, earphones, upright antenna, and batteries (the latter being carried in the pocket).

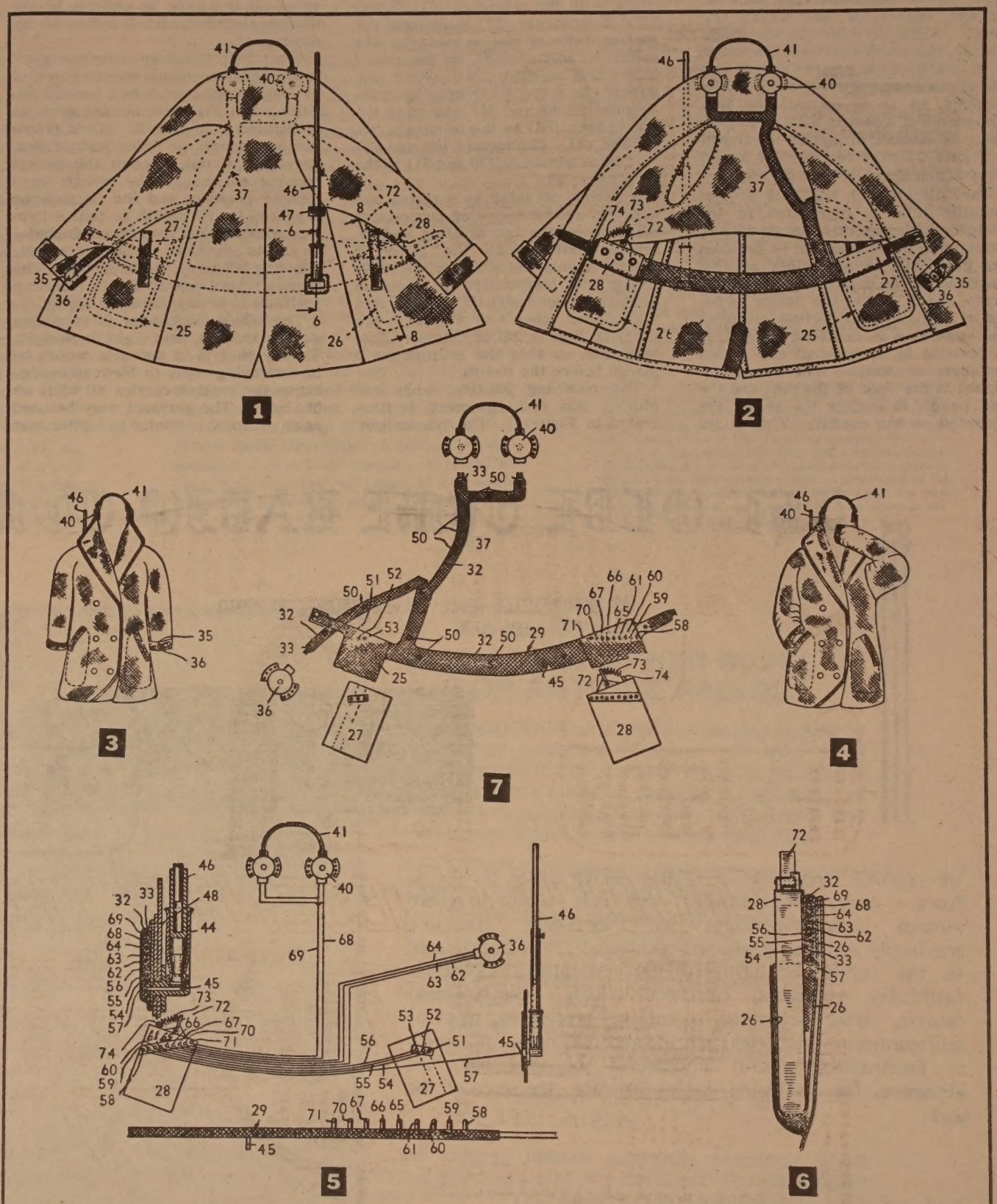
Other than a novelty, this radio coat enables soldiers to communicate with each other, and their commanding officers; or sailors may converse with one another on different ships. Firemen can send and receive instructions while combating widespread conflagrations in city buildings; policemen on their beats may receive flashes from headquarters and report riots.

This ultra-modern coat is made of water-, weather- and fireproof fabric. It is insulated with asbestos or another non-conducting material, when worn in summer or in the tropics. With a microphone mounted on the cuff of one sleeve of the coat, the earphones or headphones stitched into the collar of the garment—and the batteries inserted in the pockets—the complete ensemble, when worn, makes a man appear as an inhabitant of Mars or just lost from the dramatic pages of an Orson Welles. The upright antenna contributes further weirdness to the picture. the aerial appearing as isolated as a single, burnt-over tree after a forest fire.

The collar of the coat, with which is associated the earphones or headset, is sufficiently wide to project up over the ears when it is turned up. The pockets, having inclined slits or openings in the garment, are of ample width and depth to accommodate the batteries and other transmitting and receiving units. These pockets are supported from the belt, which is placed between the lining and outer material of the coat and is sewed at the inside or otherwise secured in position. This belt, in reality, is a flat tube and takes the form of a small tunnel, which is lined with metallic fiber or asbestos. Through this belt or flat tube run the insulated wires as conductors of the radio circuit. It includes a branch tube which extends into the left-hand coat sleeve for permanent or detachable connections with a transmitter or microphone. The latter may be raised freely to the mouth for speaking into when sending verbal instructions. Another branch of the main tube or belt leads to the collar in the back of the left-hand sleeve, branching off at the neck for connections with a cross-piece on the collar, having upright portions to connect with the earphones or headset when the collar is turned up.

The entire equipment is compact and light in weight and, according to the inventor, the wearer may walk with an unchallenged movement, although the upright, telescopic antenna rod rears itself uncomfortably close to the side of one's head.

Referring to the drawings, and outlining constructional details of this garment, the coat has the usual back portion, left-front flap, and right-front flap—to overlap and to be buttoned or otherwise secured in a closed position. The microphone may be stitched permanently on the sleeve or detachably mounted in an opening in the sleeve, with a protecting flap, as illustrated in one of the diagrams. Similarly, the earphones or headset may be mounted in a secure position, with or without



Details of the radio coat, taken from the original patent papers.

6-6—Sectional view shown in Fig. 5
8-8—Sectional view shown in Fig. 6
25—Pocket for battery
26—Pocket for radio equipment
27—Battery
28—Transmitter and receiver
29—Belt
32—Metallic tubing
33—Extension tube
35—Hole in sleeve for microphone connection
36—Microphone
37—Conduit
40—Head-phones
41—Head-phone band support
44—Socket antenna
45—Antenna socket contact
46—Antenna
47—Additional eyelet (antenna support)
50—Ball head for engaging snaps
51—Battery wire to receiver
52—Common battery wire
53—Battery wire to transmitter
54, 55, 56—Battery lead wire
57—Antenna wire
58—Antenna terminal on transmitter and receiver
59, 60, 61, 63, 66, 67—Binding post
62, 63, 64—Microphone wires
68, 69—Head-phone wires
70, 71—Terminals for head-phones
72—Switch spring
73—Spring
74—Switch stop

a detachable plug and socket connections for associating the conductors therewith. The earphones may also be connected by an electric or flexible band which fits over the head as an additional support for the parts in conjunction with the collar when turned up, as illustrated in Figure 3 and Figure 4.

The back of the coat—in the rear of the pocket and under the sleeve—is provided with a mounting flange or insulated bushing, supporting a spring socket in an upright position. This socket has a contact in the bottom, connected to one of the conductors, thus lending itself to support, detachably, an upright aerial or rod, similar to radio antennae on automobiles. This rod is of the telescopic type, built in sections, telescoping one within the other. When attached to the radio coat, this antenna rears itself upward at the back of the wearer and at one side of the head, approximately at the shoulder, so as to restrict the free movements of a person as little as possible. If desired, an eyelet (as shown in Figure 1) may receive this aerial for securing it against the garment.

The stitching of the belt or flat metallic tube is illustrated in the sketches, although this conduit may be mounted in other positions or between the garment's lining—either secured permanently or detachably. The diagram, Fig. 7, shows the device as being of identical construction, although the apparatus is mounted detachably in position by spaced-ball and socket fasteners or snaps. The snaps are placed in the cloth of the coat and the ball heads, to engage the snaps, are mounted on the conduit. This is not necessarily an arbitrary arrangement, as other suitable means may be afforded for securing the conduit and other parts, detachably, within the radio garment.

The wiring diagrams illustrate a battery having one cell provided with a terminal (51) and other cells having additional terminals (52 and 53) the terminal 51 being part of the receiving circuit and the terminal 52 being a common return. The terminal 53 is identified with a cell of the battery for supplying the necessary power for transmitting purposes. Ordinary single plug and socket connections, or other terminals may be provided for making the usual electrical connections of the conductors (54, 55, and 56), respectively, with the terminals (51, 52 and 53). A conductor (57) leads from the contact (45) of the antenna to the aerial connection (58) on the transmitter and receiver (28). Other terminals (59, 60, and 61) have the conductors (62, 63 and 64) lead from the microphone (36) to the terminals (65, 66, and 67). Conductors (68 and 69) lead from terminals (70 and 71) to the earphones (40).

A switch, actuated by a spring and normally set for receiving purposes, is mounted on the transmitting and receiving unit. When the latter is pressed against the action of the above spring, the transmitter is placed in position to send signals, by use of a microphone (shown in Fig. 4), when the left arm is raised, almost automatically, so that the microphone is placed before the mouth.

The receiving position, when employing this radio garment, is illustrated in Figure 3. The transmitter-receiver unit is equipped with a stop for the switch, or the former may be an integral portion of the switch, such as a contact for controlling the transmitting circuit as differentiated from the receiving position of the circuit, when the switch is in its normal position. Conventional plug or terminal insulating blocks may be provided on the battery and on the radio unit proper for accommodating the sockets of the detachable plug, and socket connectors, at the several points where electrical connections are made with different parts of the system. These plug or terminal insulating blocks may be employed at the earphones or receivers, as well as at the microphone, or at other points, in addition to the battery and transmitting and receiving equipment.

When this "two-way radio garment" is in operation, signals may be received by leaving the switch in a normal position when the earphones are worn, as illustrated in Figure 3. When transmitting signals or voice instructions, one hand is put through the pocket opening to change the switch to a sending position, and the microphone is placed to the mouth so that a two-way conversation may be conducted—or orders given, as in case of a commanding officer on the battlefield. The change from transmitting to receiving positions is accomplished in a jiffy.

The whole equipment is relatively small, compact, and light in weight. To say that it is portable would be like carrying coals to Newcastle—because the wearer carries all of it on his back. The garment may be used as an overcoat in winter and outer coat in summer. Waterproof, fireproof heatproof, it may be worn in many climates and countries—in the Libyan desert, or the frozen steppes of Siberia, and in the temperate zone of our own hemisphere.

The smallest broadcast receiver having four tubes and about the size of an inch-section of a glass medicine dropper; a crystal set mounted in a cocoanut shell; a portable receiver of the size and semblance of a kodak; a walking cane capable of transmitting and receiving signals within the shadow of a broadcasting station; suitcases containing complete and adequate receiving sets; vest-pocket edition of receivers smuggled in one's clothing for bootleg purposes at race tracks; and compact sets on automobiles, boats, bicycles, and every conceivable vehicular conveyance—these are some of the manifestations of radio in compressed forms, so those that travel may tune and listen. But a wise Solomon, speaking of a person arrayed in fine cloth, or a Jules Verne, in his greatest flights of imagination, never conceived of man wearing a coat literally made of radio.

Editor's note: For obvious reasons, no diagram of the radio circuit is shown and is not available -30-

SINCE WORLD WAR II HAS BEEN OVER FOR SUCH A LONG TIME, I WONDER IF ANYONE HAS WHAT IS NOW CALLED A SCHEMATIC.

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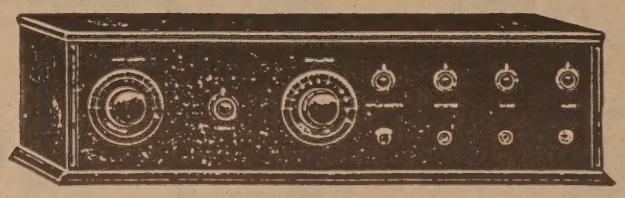

THE VINTAGE RADIO IDENTIFICATION SKETCH BOOKS of D. H. Moore - eight uniform volumes - are truly unique in modern vintage radio literature, as they answer questions previously without answer and much more. The operative word in the title is IDENTIFICATION - original schematics faithfully reproduced, component values, constructional details, trouble-shooting, operational procedures, physical configuration, historical and biographical data. A wealth of fascinating, useful information you will not find elsewhere. The following titles indicate the scope of the work:

Vol. I - INTRODUCTORY ESSAYS
Vol. IIA - BC RECEIVER SCHEMATICS - A to M
Vol. IIB - BC RECEIVER SCHEMATICS - N to Z
Vol. III - S.W. ADAPTERS & CONVERTERS
Vol. IV - POWER SUPPLIES AND AMPLIFIERS
Vol. V - HARDWARE & ACCESSORIES
Vol. VI - TEST EQUIPMENT SCHEMATICS
vol. VII - GENERAL TECHNICAL DATA

Practically all of the "orphan" sets ignored by all the usual references will be found documented here, including marques forgotten or rarely heard of today; such as Acme, Aero, Bruno, Flewelling, Loftin-White, Doerle, and Try-Mo, Lacault (Ultradyne), Victoreen, Madison-Moore, Erla, Rauland, Bosch and many more. Also included are forgotten circuits of such marques as RCA, Crosley, A-K, DeForest, etc.

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How We Got Our Bands

(CONTINUED FROM LAST MONTH)

When the short waves first opened up, every service in the country — Government, commercial and amateur — could operate anywhere it wanted to in the short-wave territory, *and did*, with increasingly chaotic results. The 1924 conference represented an attempt to solve an otherwise impossible situation by means of mutual agreements to be voluntarily respected by all services until the law could come along and catch up. Everybody was perfectly aware that the "regulations" resulting from these agreements were not binding, but everyone knew also that some sort of order was essential in order to continue operating at all.

In many respects, this 1924 Hoover Conference was a modern international radio gathering on a small scale. Every domestic service was present pushing for all the short-wave territory it could get. The "shorts" were so brand-new that nobody had a clear idea of which waves were good for what; for that reason, everyone was out to get all that could be got, from one end of the scale to the other. Without going into detail (details in past *QST*s for those interested) we may say that the outcome of the 1924 meeting was amateur bands as follows: 1500–2000 kc., 3500–4000 kc., 7000–8000 kc., 14,000–16,000 kc., 56,000–64,000 kc.

It was recommended that the Supervisor of Radio decide whether one license would permit the use of all these bands or whether multiple licenses would be necessary (it was later agreed that one would do the trick). Incidentally, it will be noticed that we here embarked on the idea of maintaining a harmonic relationship, so far as possible. The omission of any ten-meter assignment in the table, however, is not accidental; there was no assignment. The reason for this is that the Hoover series did not extend as far as the ten-meter territory. The 5-meter assignment was incorporated by special request solely because of the fact that a small group of experimenters wished to work there; the same reason applies to a subsequent 400–401-Mc. assignment for beam experiments, made shortly after the conference by the Department of Commerce at the special request of ARRL.

Other bands were assigned to the various other services which wanted space in the spectrum and which, remember, were just as much entitled to it as we were.

Since the 1925 conference did nothing to alter this general set-up we will skip over it and say that during 1924, '25 and '26 we here in the U. S. operated in the 1924 bands. By mutual agreement, of course.

In the meantime, Congress was being bombarded with requests and entreaties for a new law but was still doing nothing about it. How long this might have gone on no one knows had it not been that in 1926 the so-called "breakdown of the law" came about when a broadcast station which didn't like its assignment on the mutual-agreement basis made a test case resulting in a court opinion denying the Secretary of Commerce the authority to compel stations to observe any specified wavelength assignments (outside the very broad limits previously mentioned in the basic law). Overnight, all the existing regulations which specified definite wavelength assignments were rendered inoperative. Any other service that wanted to could have started to operate in "our" bands, for instance. It was a tense moment! Would all the radio stations in the country jump their assignments? Well, they could have, but most of them didn't; almost unanimously, the radio world in this country sat tight on its Hoover agreements, one of the most remarkable spectacles radio regulation will probably ever see.

However, this upset of the 1912 law had the effect of spurring Congress to the realization of the absolute necessity for a new law and so in 1927, the same year when the Washington International Conference was held (but before that affair), Congress passed the Radio Act of 1927 which not only defined amateurs for the first time in any law, foreign or domestic, but set up a Federal Radio Commission to administer radio matters and gave it the necessary authority to make regulations that would stick. As soon as the commission was created, we got it to assign to us the same wave-bands that had been agreed upon at the 1924 Hoover Conference, except that we had a 10-meter band included.

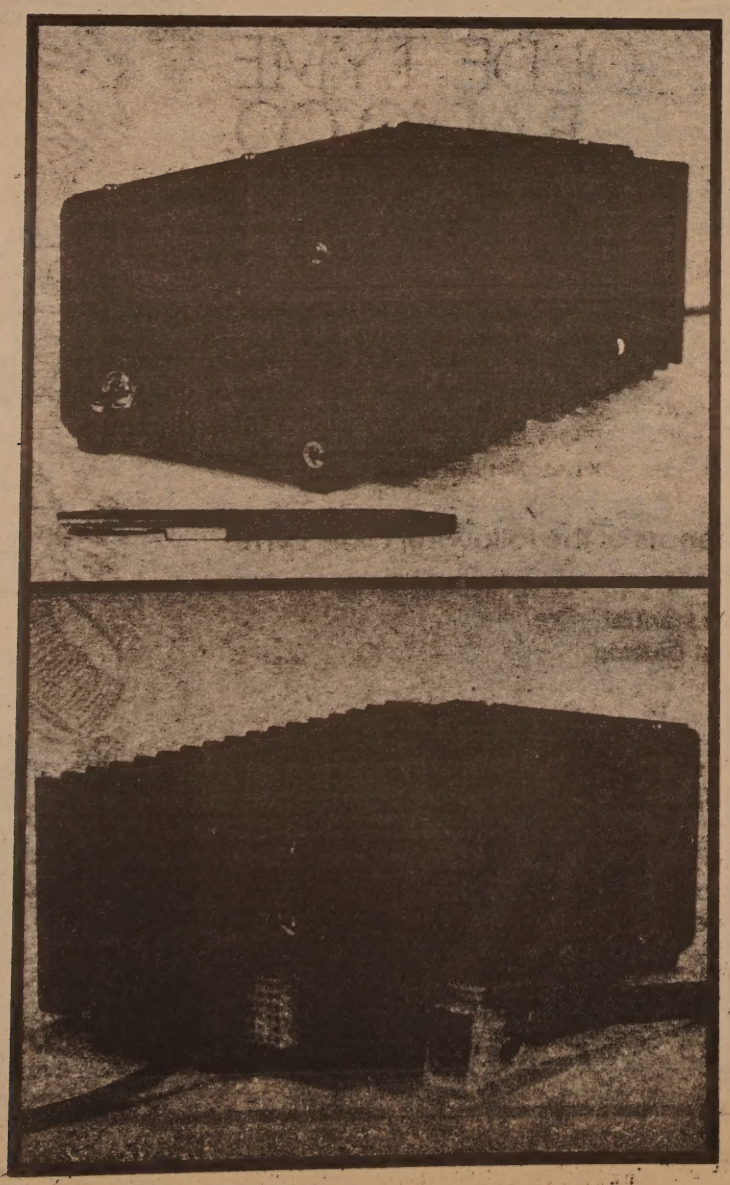
We are now almost through with the story. Discerning readers may at this point ask how we could get the Hoover bands assigned to us under the 1927 U. S. radio law when our Government was a party to (and ratified) the 1927 international treaty which gave us somewhat different territory — specifically, narrower bands at 7 and 14 Mc.[7] The answer is that the 1927 U. S. law went into effect before the Washington conference was held and, further, that the terms of the Washington conference did not go into effect until January 1, 1929. Until January of 1929, therefore, our Government let the wider-band specifications stand as U. S. law. On January 1, 1929, however, it immediately amended our amateur regulations to conform strictly to the international agreements.

From that time to the opening of the second World War, through both national and international regulations, we retained the bands first set up for amateur use in the Washington International Treaty of 1927.

This concludes a very rapid and rather brief résumé of our amateur progress in terms of legislation. It is, needless to say, impossible in such an article as this to go into detail or to describe adequately the tremendous part played in all amateur matters by the ARRL ever since the League's formation.

In the next issue will appear a brief outline of the steps leading up to an international conference, a description of how such a gathering does business, and a résumé of the preparatory work which has been going on in this country looking to our participation in the Atlantic City Conference which opens in May.

[7] Although the U. S. government's proposals for amateurs at the 1927 international conference were for the same bands we were using domestically as a result of the Hoover agreements, practically every other nation was bitterly opposed to amateurs having any appreciable bands — or even any privileges at all in the high-frequency spectrum. The bands we got represented the only compromise our Government could secure in the face of an almost unanimous effort on the part of the other governments to bar amateurs from the h.f. spectrum entirely, or permit it only under the most restricted conditions, such as use of dummy antennas, etc.



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The Model H10A contains three independent and electrically isolated regulated power supplies:

The "A" output provides one of twelve (12) switch selectable outputs: 1.1, 1.5, 2.0, 2.5, 3.0, 3.3, 4.5, 5.0, 6.0, 7.5, 8.0, and 9 volts; at 5 and 6V the H10A is rated at 5 Amp.

The "B" voltages of 22.5, 45, 67.5, 90, and 135V may be used in any combination with a rating of 50 mA.

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All outputs feature automatic electronic short circuit protection and very low ripple. The H10A operates from 117VAC 50-60HZ. Price is $159.95 UPS prepaid in U.S.A. Canadian customers please add $5.00.

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Radios

The chart of early broadcast receivers on page four should help many collectors identify vintage radios. The chart makes a good wall decoration and provides quick ammunition to settle an argument.

These radios and accompanying information will appear in several consecutive editions and subscribers will obtain the complete set within months.

Even though these radios are not direct reprints, they are the same radios with the same information that were printed in the March, 1925 edition of Radio News. Many of the illustrations Radio News probably received from set manufacturers were not of good quality. We have improved these illustrations and listed the radios alphabetically by the name of the radio. However, the accuracy of the original information is maintained.

TRADE NAME: "A-C Dayton XL-5."
MODEL: Standard.
TYPE: Tuned radio frequency with control for balancing.
TUBES: Five.
BATTERIES: Storage battery or dry cells.
CONTROLS: Three.
AERIAL: Outside or inside.
PRICE: $115.00 without accessories.
MANUFACTURER'S NAME: A-C Electrical Mfg. Co.

TRADE NAME: Adler-Royal Neutrodyne.
MODEL: Table type No. 201A.
TYPE: Neutrodyne.
TUBES: Five.
BATTERIES: "B" batteries in cabinet.
CONTROLS: Three
AERIAL: Indoor, outdoor.
PRICE: $160 without accessories; $215 with accessories.
MANUFACTURER'S NAME: Adler Mfg. Co.

TRADE NAME: "A-C Dayton XL-5."
MODEL: Console.
TYPE: Tuned radio frequency with control for balancing.
TUBES: Five.
BATTERIES: Storage battery or dry cells.
CONTROLS: Three.
AERIAL: Outdoor or indoor.
PRICE: $250.00 with built-in loud speaker.
MANUFACTURER'S NAME: A-C Electrical Mfg. Co.

TRADE NAME: Adler-Royal Neutrodyne.
MODEL: Floor type No. 1 Elizabethan.
TYPE: Neutrodyne.
TUBES Five.
BATTERIES: Contained in cabinet.
AERIAL: Indoor, outdoor.
CONTROLS: Three.
PRICE: $350 including loud speaker.
MANUFACTURER'S NAME: Adler Mfg. Co.

TRADE NAME: Adaunit.
MODEL: Portable, built-in loud speaker.
TYPE: Non-regenerative.
TUBES: Three.
BATTERIES: Dry cells used throughout, space provided in cabinet.
CONTROLS: Two.
AERIAL: Outdoor or indoor.
PRICE: $87.50 without accessories.
MANUFACTURER'S NAME: Auto Indicator Co.

TRADE NAME: "Ambler-Holman Receiver."
TYPE: Neutrodyne.
TUBES: Five.
BATTERIES: "B" and "C"; batteries may be contained in cabinet.
CONTROLS: Three.
AERIAL: Indoor or outdoor.
PRICE: $75.00 without accessories.
MANUFACTURER'S NAME: Ambler-Holman Co.

TRADE NAME: Adler-Royal Neutrodyne.
MODEL: Table type No. 199.
TYPE: Neutrodyne.
TUBES: Five UV-199.
BATTERIES: Dry cells contained in cabinet.
CONTROLS: Three.
AERIAL: Indoor, outdoor.
PRICE: $165 without accessories; $205 with accessories.
MANUFACTURER'S NAME: Adler Mfg. Co.

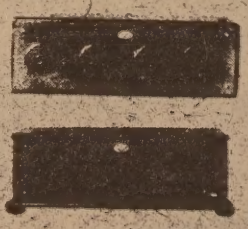
TRADE NAME: "Amrad."
MODEL: Neutrodyne.
TYPE: One tuned radio, detector and three audio.
TUBES: Five.
BATTERIES: "A" and "B" needed.
CONTROLS: Two.
AERIAL: Outside or inside.
PRICE: $85.00.
MANUFACTURER'S NAME: American Radio and Research Corporation.

TRADE NAME: "Amrad."
MODEL: Cabinette; built-in loud speaker.
TYPE: One radio, detector and two audio.
TUBES: Four.
BATTERIES: "A" and "B" needed.
CONTROLS: Two.
PRICE: $180.00 without accessories.
AERIAL: Outside or inside.
MANUFACTURER'S NAME: American Radio and Research Corporation.

TRADE NAME: "Amrad."
MODEL: Inductrole.
TYPE: One radio, detector and two audio.
TUBES: Four.
BATTERIES: "A" and "B" needed.
CONTROLS: Two.
AERIAL: Outside or inside.
PRICE: $100.00 without accessories.
MANUFACTURER'S NAME: American Radio and Research Corporation.

TRADE NAME: "Apex Super."
TYPE: Two tuned radio, detector and two audio.
TUBES: Five.
BATTERIES: None furnished.
CONTROLS: Three.
AERIAL: Outside or inside.
PRICE: $95.00 without accessories.
MANUFACTURER'S NAME: Apex Electric Manufacturing Company.

TRADE NAME: "Atwater-Kent."
MODEL: 20.
TYPE: Two radio, detector and two audio.
TUBES: Five 201A type.
BATTERIES: Storage "A" and 90-volt "B"
CONTROLS: Four.
AERIAL: Indoor or outdoor.
PRICE: $100.00 without accessories.
MANUFACTURER'S NAME: Atwater-Kent Mfg. Company.
NOTE: DeLuxe cabinet, $120.00 without accessories.

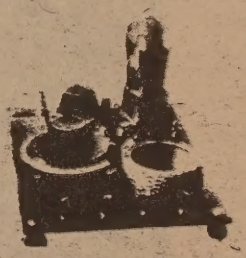


TRADE NAME: "Atwater-Kent."
MODEL: 9.
TYPE: One radio, detector and two audio.
TUBES: Four 201A type.
BATTERIES: Storage "A" and 90-volt "B."
CONTROLS: Two.
AERIAL: Outside or inside.
PRICE: $65.00 without accessories.
MANUFACTURER'S NAME: Atwater-Kent Mfg. Company.

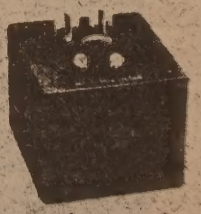
TRADE NAME: "Atwater-Kent."
MODEL: 10.
TYPE: Two radio, detector and two audio.
TUBES: Five 201A type.
BATTERIES: Storage "A" and 90-volt "B."
CONTROLS: Three.
AERIAL: Inside or outside.
PRICE: $85.00 without accessories.
MANUFACTURER'S NAME: Atwater-Kent Mfg. Company.

TRADE NAME: "Atwater-Kent."
MODEL: 12.
TYPE: Two radio, detector and two audio.
TUBES: Six 201A type.
BATTERIES: 6-volt storage "A" and 90-volt "B."
CONTROLS: Three.
AERIAL: Inside or outside.
PRICE: $105.00 without accessories.
MANUFACTURER'S NAME: Atwater-Kent Mfg. Company.

TRADE NAME: "Atwater-Kent."
MODEL: 19.
TYPE: One-stage tuned radio, detector and two audio.
TUBES: Four 201A type.
BATTERIES: 6-volt storage "A" and 90-volt "B."
CONTROLS: Two.
AERIAL: Outdoor.
PRICE: $85.00 without accessories.
MANUFACTURER'S NAME: Atwater-Kent Mfg. Company.

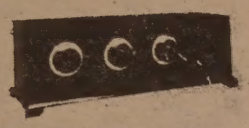


TRADE NAME: Babydyne.
TYPE: Regenerative.
TUBES: One.
BATTERIES: "A" and "B" required.
CONTROLS: One.
AERIAL: Outside.
PRICE: $10 without accessories.
MANUFACTURER'S NAME: A. & T. Radio Co.



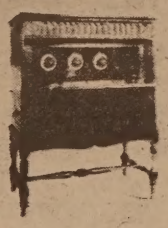
TRADE NAME: "Balanced Amplifier."
MODEL: To be used with Radiola III.
TYPE: Two stages of audio frequency amplification.
TUBES: Two WD-11.
BATTERIES: Dry cells.
PRICE: $30.00 without accessories.
MANUFACTURER'S NAME: Radio Corp. of America.

TRADE NAME: "Belleclaire."
MODEL: Standard.
TYPE: Two radio frequency, detector and two audio.
TUBES: Five.
BATTERIES: "A" and "B" needed.
CONTROLS: Four.
AERIAL: Inside or outside.
PRICE: $165.00 without accessories.
MANUFACTURER'S NAME: R. B. Radio Company.



TRADE NAME: "Belleclaire."
MODEL: Console cabinet.
TYPE: Two radio, detector and two audio.
TUBES: Five.
BATTERIES: "A" and "B" needed.
CONTROLS: Four.
AERIAL: Inside or outside.
PRICE: $250.00 without accessories.
MANUFACTURER'S NAME: R. B. Radio Company.

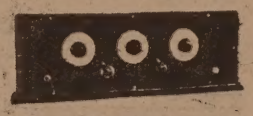
TRADE NAME: "Belleclaire."
MODEL: Knickerbocker with Amplion built-in loud speaker.
TYPE: Two radio, detector and two audio.
TUBES: Five.
BATTERIES: "A" and "B" needed.
CONTROLS: Four.
AERIAL: Inside or outside.
PRICE: $350.00 without accessories.
MANUFACTURER'S NAME: R. B. Radio Company.



TRADE NAME: Bestone.
MODEL: V-60.
TYPE: Two stages tuned radio frequency, detector and two audio frequency.
TUBES: Five.
BATTERIES: None furnished.
CONTROLS: Two.
AERIAL: Inside or outside.
PRICE: $100.00.
MANUFACTURER'S NAME: Henry Hyman & Co.

TRADE NAME: Bestone.
MODEL: V-60.
TYPE: Tuned radio frequency, detector and two audio frequency with built-in loud speaker.
TUBES: Five.
BATTERIES: None furnished.
CONTROLS: Two.
AERIAL: Outside or inside.
PRICE: $150.00.
MANUFACTURER'S NAME: Henry Hyman & Co.

TRADE NAME: "Biltmore Radio Receiver."
MODEL: T-5.
TYPE: Two stages of radio frequency amplification, detector and two stages of audio frequency amplification.
TUBES: Five.
BATTERIES: Not furnished.
CONTROLS: Three.
AERIAL: Indoor or outdoor.
PRICE: $65.00 without accessories.
MANUFACTURER'S NAME: Biltmore Radio Company.



TRADE NAME: "Blue Seal."
MODEL: 4.
TYPE: One radio, detector and two audio.
TUBES: Four.
BATTERIES: None furnished.
CONTROLS: Three.
AERIAL: Outside or inside.
PRICE: $70.00 without accessories.
MANUFACTURER'S NAME: Blue Seal Manufacturing Company.

TRADE NAME: Blue Seal.
MODEL: Five.
TYPE: Two radio, detector and two audio.
TUBES: Five.
BATTERIES: None furnished.
CONTROLS: Four.
AERIAL: Inside or outside.
PRICE: $140.00 without accessories.
MANUFACTURER'S NAME: Blue Seal Manufacturing Company.

TRADE NAME: "Breco."
MODEL: BSC-3.
TYPE: Detector and three audio.
TUBES: Four.
BATTERIES: "A" and "B."
CONTROLS: Six.
AERIAL: Indoor or outdoor.
PRICE: $110.00 without accessories.
MANUFACTURER'S NAME: Bronx Radio Equipment Company.

TRADE NAME: Cameo.
MODEL: A.
TYPE: Three stages radio, detector and two audio.
TUBES: Five.
BATTERIES: "A" 6-volt, "B" 90 volts.
CONTROLS: Three.
AERIAL: Inside or outside.
PRICE: $125.00.
MANUFACTURER'S NAME: General American Radio Manufacturing Corp.

TRADE NAME: "Carryadio."
TYPE: Three stages of radio frequency amplification, detector and two stages of audio frequency amplification.
TUBES: Six.
BATTERIES: Dry cells contained in case.
CONTROLS: Three.
AERIAL: Loop contained in case.
PRICE: $125.00 including batteries, tubes, loud speaker and loop.
MANUFACTURER'S NAME: Armley Radio Corporation.

TRADE NAME: "Cincodyne."
MODEL: Blue Seal.
TYPE: Two-stage radio, detector and two audio.
TUBES: Five.
BATTERIES: None furnished. "A" and "B."
CONTROLS: Three.
AERIAL: Outside or inside.
PRICE: $135.00 without accessories.
MANUFACTURER'S NAME: Blue Seal Manufacturing Company.

TRADE NAME: Claratone.
TYPE: Tuned radio frequency, detector and audio.
TUBES: Five.
BATTERIES: None furnished.
CONTROLS: Three.
AERIAL: Outside or inside.
PRICE: $50.00 without accessories.
MANUFACTURER'S NAME: Equitable Radio Corp.

TRADE NAME: Cleartone Perfect Crystal Set.
TYPE: Fixed crystal detector. Cleartone circuit.
CONTROLS: One.
AERIAL: Outside.
PRICE: $7.50 without accessories.
MANUFACTURER'S NAME: Cleartone Radio Supply Co.

TRADE NAME: "Combidyne."
TYPE: One stage of radio frequency amplification, detector and two stages of audio frequency amplification.
TUBES: Four.
BATTERIES: Not furnished.
CONTROLS: Three.
AERIAL: Inside or outside.
PRICE: $75.00 without accessories.
MANUFACTURER'S NAME: Wolverine Radio Company.

TRADE NAME: "Compendyne."
TYPE: Two radio, detector and two audio.
TUBES: Five.
BATTERIES: None furnished.
CONTROLS: Three.
AERIAL: Indoor or outdoor.
PRICE: $65.00 without accessories.
MANUFACTURER'S NAME: E. Singer Co.

TRADE NAME: Concert Grand.
TYPE: Two tuned radio frequency, detector and two audio.
TUBES: Five.
BATTERIES: Not furnished.
CONTROLS: Three.
AERIAL: Indoor and outdoor.
PRICE: $120.00 without accessories
MANUFACTURER'S NAME: The Concert Radio Phone Co.

TRADE NAME: "Concert Grand."
MODEL: S-70.
TYPE: Neutrodyne.
TUBES: Five.
BATTERIES: Dry cell batteries may be self-contained.
CONTROLS: Three.
AERIAL: Indoor or outdoor.
PRICE: $180.00 without accessories.
MANUFACTURER'S NAME: R. E. Thompson Mfg. Co.

(CONTINUED)

SOCIAL EVENTS

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HOUSTON VINTAGE RADIO ASSOCIATION, 6110 PECAN LANE, KATY, TEXAS 77449.

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INDIANA HISTORICAL RADIO SOCIETY,

245 N. Oakland Avenue, Indianapolis, IN 46201.

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THE ANTIQUE RADIO CLUB OF ILLINOIS, one of the clubs that conducts large meets of national prominence in the Chicago area. For more information contact: Joe Willis, P. O. 14732, Chicago, Il 60614.

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WELCOME TO SEND IN AN AD ABOUT YOUR CLUB.

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NORTHWEST VINTAGE RADIO SOCIETY — Annual dues $12.50. monthly newsletter, THE CALL LETTER. Write: Ed Charman, Northwest Vintage Radio Society, P. O. box 02379, Portland, OR 97202.

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ARIZONA ANTIQUE RADIO CLUB, a lately formed club that publishes RADIO NEWS, a quarterly bulletin with informative articles and ads. Annual dues are: $10.00 for a year. Write: Lee Sharpe, treasurer, Arizona Antique Radio Club, 2224 W. Desert Cove #205, Phoenix, AZ 85029.

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CALIFORNIA HISTORICAL RADIO SOCIETY is a popular group that publishes a journal six times a year and provides swap meets four times a year for its members. CHRS, P. O. Box 1147, Mountain View, CA 94042-1147.

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SEND IN YOUR CLUB NEWS — EARLY

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MID-AMERICA ANTIQUE RADIO CLUB, 9723 CARTER DRIVE, OVERLAND PARK, KANSAS 68212.

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VINTAGE RADIO AND PHONOGRAPH SOCIETY, an organization that is famous for its yearly conventions in the Dallas area. Also it publishes a journal approximately six times a year. Both phonograph and radio collectors are invited to join this society from all over the country. Dues are $13.50 a year. Write: Vintage Radio and Phonograph society, P. O. Box 165345, Irving, TX 75016.

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THE SOCIETY TO PRESERVE AND ENCOURAGE RADIO DRAMA VARIETY AND COMEDY, P.O. BOX 1587, HOLLYWOOD, CALIFORNIA, 90078.

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THE SEVENTH ANNUAL HVRA SHOW AND AUCTION will be on Saturday, May 3, at Memorial City Shopping Center. Mark your calendar and plan to attend, for this is truly a grand day and event. Interested? If so, contact HVRA at the address listed above.

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INDIANA HISTORICAL RADIO SOCIETY AND ANTIQUE WIRELESS ASSOCIATION REGIONAL SPRING MEET - SATURDAY, APRIL 19, 1986 AT THE AUBURN-CORD-DUESENBERG MUSEUM IN AUBURN, INDIANA — FRIDAY, APRIL 18: Early registration 4:00 p.m. "Old Tyme Movie" 7:00 p.m. — SATURDAY, APRIL 19: Swap meet 9:00 a.m., Old equipment contest (classes to be announced) Auction of personal and donated items 1:00 p.m. Banquet and awards (best of show receives the Grebe trophy) 7:00 p.m. — All club member and guests are welcome. For complete motel and program information, write: Ross Smith, 1133 Strong Avenue, Elkhart, IN 46514.

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MILWAUKEE AREA RADIO ENTHUSIASTS (Ken Pabst), 4441 N 77th Street, Milwaukee, WI 53218

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RADIO COLLECTORS OF AMERICA (bob Levin), 8 Ardsley Circle, Brockton, MA 02402

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flea market

ADVERTISE IN THE HORN SPEAKER
Box 53012, Dallas, TX 75253 (lower price per square inch— compare)

AD SPACE:
Full page $75.00
Half page $37.50
Quarter page $16.25
Business size card ads $1.00
Space per square inch $0.60

CLASSIFIED ADS .. 15 cents a word.

PHOTO ADS ..... $5.00 extra.

FOR SALE OR TRADE

****

FOR FREE VINTAGE RADIO PARTS FLYER SEND S.A.S.E. TO OLDE TYME RADIO COMPANY, 2445 LYTTONSVILLE ROAD, SILVER SPRING, MD 20910

****

FOR SALE — 200 PLASTIC/BAKELITE 4 or 5 tube small radios as removed from a closed up repair shop. Use for parts or repair them. Sold as removed. 3 for $10.00 plus U.P.S. shipping. Krantz, 100 Osage Avenue, Somerdale, NJ 08083.

****

RIDERS, HOWARD SAMS, RCA, PHILCO PLUS OTHER SERVICE DATA. TUBES PARTS, TEST EQPT. SASE FOR LIST. WRITE WANTS AND SASE. KRANTZ, 100 OSAGE AVENUE, SOMERDALE, NJ 08083.

****

NOW! TWO BOOKS from ALLABOUT BOOKS
ALL ABOUT METERS. History of the development of electrical meters; build simple meters representive of the historical types.
ALL ABOUT CRYSTAL SETS. Theory and construction of crystal set radios.
$7.95 each, ppd USA. Send to Dept. H, P. O. Box 4155, Fremont, CA 94539.

****

FOR SALE, RIDERS, HOWARD SAMS, RCA, PHILCO, PLUS OTHER SERVICE DATA. SETS, PARTS, TUBES. LIST FOR S.A.S.E. — KRANTZ, 100 OSAGE AVENUE, SOMERDALE, NJ 08083.

****

SCHEMATICS — RADIO $1.25, TV $3.50. Give make and model number. Newly printed tube manuals of antique tubes containing tube characteristics, pin diagrams, VT numbers and substitution guide $5.00. Books, tubes and other parts send SASE for list. Willis Housel, 1816 S.W. 12th, Lincoln, NE 68522.

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CRYSTAL, TUBE EXPERIMENTER'S catalog - $1.00 - None free. sets, kits, handbooks, plans, coils, supplies, obsolete tube quotations. Laboratories, 1477-H, Garden Grove, CA 92642.

****

FOR SALE — CATHEDRAL, BATTERY, AND A. C. radio. Photo list four times per year. Send S.A.S.E. to J. Albert Warren, Box 279, Waverly, PA 18471.

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SPARTON AC62, PHILCO 95, AK 86, AK 185A, DeFOREST DT700, ROGERS MAJESTIC, BENDIX 115, AK-H HORN SPEAKER, JACKSON TUBE TESTER 648, 500 TUBES... WANT: EARLY WOOD CASED ELECTRONIC TEST EQUIPMENT, ESPECIALLY OAK CASED OSCILLOSCOPE. JOHN KENDALL, 600 REMINGTON ROAD, FALLSTON, MD 21047.

****

KELLOGG 510 COMPLETE WITH KELLOGG TUBES $195.00. Deforest F5 with Deforest tubes like picture October issue of THE HORN SPEAKER $250.00. .... WANT Ozarka V16 chassis, Ray Miner, 1215 Avenue B, Fort Madison, IA 52627. (319) 372-1271.

****

AK, CROSLEY, STEWART WARNER TOMBSTONES, PHILCO, JAX, GLORITONE CATHEDRALS. INTERESTING ART DECO WOOD PLASTICS. SASE for big list. Edward Ripley, 2276 Holloway Avenue, Maplewood, MN 55109.

****

10 BOOKS, JOHN RIDERS — I to V - VI to XIV, 30 speaker or phone jacks for old battery radios. Russell Schoen, Route 1 Box 224, Clintonville, WI 54929.

****

FOR SALE: TUBES, 1R5, 1U4, 1U5, 5AQ5, 5BE8, 5DT8, 6BC5, 6CQ8, 6EB8, 12AU6, All N.O.S. in original boxes and name brands. 10 for $15.00 p.pd. in the 48 states. No C.O.D. please. You may mix or match. Rider radio manuals vol.s 8 through 14, these are in very good condition. $10.00 each p.pd. Parts and tube list available in late February. C. F. ENGLAND, 98 Montague Avenue South, Zanesville, OH 43701.

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1 PHILCO CATHEDRAL MODEL 50, 1 Philco cathedral model 60, 1 Philco cathedral model 3784, 1 AK cathedral model 84, .. Russ Schoen, R # 1, Clintonville, WI 54929.

****

HEATHKIT TEST EQUIPMENT 1940's tube type and color bar generator F.M. sweep generator, television alignment generator. .. Charles Kaelber, P. O. Box 3335, Spring Hill, FL 33526. Phone (904) 683-7202.

****

RADIO SCHEMATICS $1.25, give make and model number. TV schematics, give make and model number, $3.50. Newly printed tube manuals of antique tubes containing tube specifications tube diagrams VT guide substitution guide $5.00. Books tubes and other parts. Send SASE for list. Willis Housel, 1816 S.W. 12, Lincoln, NE 68522.

****

RIDERS RADIO AND TV SEVICE MANUALS, RCA, PHILCO, HOWARD SAMS, FOLDERS AND BOUND VOLUMES. RADIO TUBE TESTERS, SIGNAL GENERATORS, TUBES, PARTS, VOLUME CONTROLS, KNOBS, LIST FOR SASE. 100'S OF OTHER UNLISTED ITEMS, BOOKS, WRITE WANTS, SASE FOR REPLY. KRANTZ, 100 OSAGE AVENUE, SOMERDALE, NJ 08083.

****

FOR SALE: BALLAST TUBE HANDBOOK-58 PAGES OF TECHNICAL DATA, LISTS WELL OVER 1800 TUBES, AMERICAN AND EUROPEAN, $7.50 POSTPAID IN U.S.A. ANTHONY JACOBI, 8053 MAYWOOD, RALSTON, NE 68127. U.S.A.

****

1 REMLER RECEIVER.. A GEM IN EXCELLENT CONDITION. CONTAINS 8 '99" TUBES. WHICH ARE LISTED AT $45.00 EACH. WILL SELL FOR $300.00 PLUS SHIPPING BY U.P.S. — 1 THERMIODYNE T.F.6 RECEIVER .. BEAUTIFUL SCARCE SET. CONTAINS TUBES... LIKE NEW INSIDE. WILL SELL FOR $300.00 PLUS SHIPPING... VIA U.P.S. — 1 DAY FAN WITH TUBES... BEAUTIFUL SET.. MINT.. WILL SELL FOR $200.00 PLUS SHIPPING. — ALSO HAVE SEVERAL OTHER SETS IN VARIOUS KINDS OF CONDITION.. SUCH AS: GLOBE.. A. KS.. FREED EISMAN... ALSO SEVERAL OLD SPEAKERS.. RADIO TEST EQUIPMENT AND OLD CABINETS INC CATHEDRAL AND TOMBSTONE AND MUCH OTHER "STUFF" IF YOU ARE INTERESTED DROP ME A NOTE... REV. GEORGE J. THOMSON.. W9CHP, 309

SPRUCE STREET, MONON, IN 47959.

****

FOR SALE: BATTERY SETS, HORNS AND CONE SPEAKERS, LSASE for list. H. FOTHE, 10 JACKSON STREET, SLOATSBURG, NY 10974.

****

B-K PRECISION MODEL 415, solid state sweep/ marker generator radio Rider manuals vol. 1 to 23, vols. 1 to 19, vol. 1 to 13, Rider T.V. manuals vol. 1 to 7. Clarence Stevahn, P. O. Box 576, Wishek, ND 58495. (701) 452-2790.

****

FOR SALE - BATTERY AND ELECTRIC RADIOS, 1926 NRI Radio course, RCA Service manuals, other books and test equipment, dial belts, parts and tubes. SASE for list. Jim Briscoe, Box 71B R R 5, Rushville, IN 46173.

****

MAJESTIC 29, CONSOLES, AK CONSOLES, RADIOLA CONSOLES, SASE FOR LIST. RUSS OLMSTED, RT 11, MURFREEBORO, TN 37130.

****

A VERY SPECIAL, IN GOOD WORKING ORDER, 800 SERIES SCOTT WITHOUT THE CABINET.. HAS A.M. AND F.M. CHASSIS WITH AUTOMATIC TUNING IT CAN BE PROGRAMMED AHEAD. IT HAS A SEPARATE AMPLIFIER AND 15" LOUDSPEAKER. IT HAS A FULL COMPLIMENT OF TUBES.. WILL TAKE $450. PLUS SHIPPING COSTS... HAVE COMPLETE INSTRUCTION MANUALS PLUS SCHEMATICS AND PARTS LIST.. WRITE FOR PICTURES AND MORE INFORMATION. REV. GEORGE J. THOMSON.. W9CHP, 309 SPRUCE STREET, MONON, IN 47959.

****

WANTED

WANTED — SMALL TABLE MODEL RADIOS FROM 1930s THROUGH 1950s IN BAKELITE PLASTIC, MIRRORED OR ART DECO STYLE. H. GRINER, 2300 S.W. 81 AVE., MIAMI, FL 33155. PHONE 1 (305) 264-3170 AFTER 6 P.M.

WANTED: PICTURE TUBE TESTER- COMPLETE IN GOOD CONDITION. FRED EMERSON, 627 ILLINOIS AVENUE, ELGIN, IL 60120.

PILOT MODEL L-8 CHASSIS, (2.5V HEATER TUBES), JUNKER O.K. NATIONAL SW-3 COILS OR COIL FORMS. KAPLAN, 14902 84TH AVENUE CT. NW, GIG HARBOR, WA 98335.

PHILCO 15DX CHASSIS AND SPEAKERS or will sell good cabinet for same. 125 FLICK OF SWITCH. Marion Van Hal, 1328 Orchard Dr., Pella, IA 50219.

WANTED: REPAIR on some of my old radios (Philco, Motorola, Majestic, Truetone, etc.). Also need tube tester. D. A. Ehrlich, Box 510, 528 Nagel, Follett, TX 79034.

ORION'S "76-77" CB RADIO TRADE BOOK, NOSTALGIC CB BUFF. GARY CAPPOEN, 18025 NE CHEHALEM DRIVE, NEWBERG, OR 97132.

GRANDFATHER CLOCK RADIOS, FANCY HORNS, 1920s PORTABLES, DeFOREST and KELLOGG TUBE AC SETS. ROSENTHAL, 507 S. MARYLAND AVENUE, WILMINGTON, DE 19804.

WANTED: DYNASCAN 1000 IN STILL GOOD CONDITION. OK ON SMALLER TUBES MISSING. CONDITION ON C.R.T. IF KNOWN?. IT MAY BE REJUVINATED IF NOT COMPLETELY DONE IN, SHOULD HAVE SOME EMISSION, NO SERIOUS SCREEN DEFECTS LIKE HALOS OR SILVERING. KNOWN SUBSTITUTE?. DYNASCAN PICKUP AND RF GENERATOR USING 931-A. GOOD CONDITION PREFERABLE. OK ON MISSING TUBES SAVE PHOTOMULTIPLIER. CBS COLOUR WHEELS, COLOUR SLAVE 15"-17" GOOD CONDITION. COLOUR PHOTOS, SLIDES 16MM COLOUR MOTION PICTURES FROM STUDIO MONITOR OR OTHER. WOULD WELCOME CORRESPONDENCE FROM COLLECTORS OF CBS MATERIAL. D''ARCY BROWNRIGG, P. O. BOX 292, CHELSEA, QUEBEC, CANADA, JOX 1NO.

WANTED: ELECTRON TUBES AND EARLY audio/ stereo equipment. Ex. — Marantz, McIntosh, W.E., etc. Tubes - 50, 250, 350, 450, 45, 245, etc. — plus many W. E. types. Please contact me with anything of interest. Charles Dripps, 4331 Maxson Road, El Monte, CA 91732 (818) 444-7079.

WANTED Crystal set radios, varible condensers, coils, variometers, crystal detectors, carborundum detectors, galena crystals, cat whiskers, headphones, terminals, tap switches, headphones, circuit diagrams, pictures, books, detector holders, coil forms, etc. Starting vintage radio company to supply kits, plans, parts to interest young people in radios instead of just computers. MIDCO, 660 North Dixie Highway, Hollywood, FL 33020.

S.A.S.E. is a self addressed stamped envelope.

WANTED COAXIAL OR TRIAXIAL SPEAKERS of Jensen, Trusonic, Tannoy, Altec 604's. Western Electric equipment (tubes, amps., drivers, horns, speakers, microphones and parts). Radio tubes (50's, 211, 845, 8005) David Yo, P. O. Box 832, Monterey Park, CA 91754. Tel. (818) 576-2642.

EVERYMAN'S GUIDE TO RADIO, VOLUMES two, three and four. (copyright 1926-1927) Brian Rhodes, 90 Francis Avenue, Stanhope, NJ 07874.

NORDEN HAUCK SUPER 10 cabinet, Norden Hauck R.F. coil A-6 for super 10. Federal 61 cabinet. Philco Predicta. J. Cunningham, 675 W. Ardmore, Roselle, IL 60172.

TV'S WANTED! pre 1955, 12" or smaller round tube (pot holes), Pilots, Philcos "swivel head," magnifier color wheels, early color sets, RCA CT-100. And, of course pre war sets! Buying bakelite and plastic radios, novelty sets, rep-woods, etc. B&K TV analyst wanted. Harry Poster, Box 1883, South Hack., NJ 07606. (201) 794-9606/ 956-6680.

HALLICRAFTER SX-71 receiver, Roy Schmitt, Rt. 1, Box 800 Lot 84, Converse, TX 78109, (512) 658-2669.

CATHEDRAL RADIOS, MUST BE NICE AND WORKING CONDITION. WILL PAY TOP DOLLAR. ALSO WANT OTHER UNUSUAL AC RADIOS. HAROLD PERKINS, 4468 SUN VALLEY DRIVE, LAS VEGAS, NV 89121.

WANTED: INSTRUCTION MANUAL FOR E.I.C.O. VOLT - OHM METER - MODEL 249, SERIAL # 8141, XEROX COPY O.K. M. J. POWELL, BOX 72, HOPE, ND 58046.

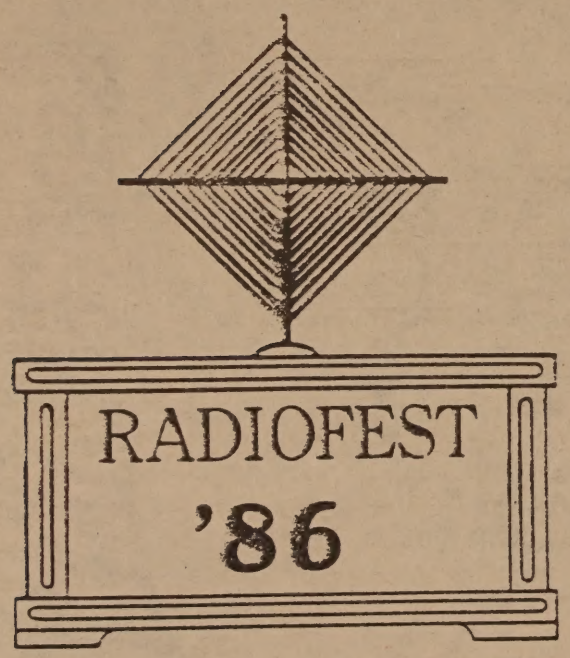
WANTED. PARTS FOR GREBE CR 9. All small parts, no cabinet or panel. Walter Reichert, 217 East Lyons Street, Marissa, IL 62257.

STRONG BUYER! Wanted colored "bakelite" radios. All manufacturers, also mirrored radios! Mark Honea, 13201 N.W. 81st, Parkville, MO 64152. (816) 891-2441.

WANTED: DOES ANYONE HAVE A DeFOREST PROFESSIONAL DETECTOR BOX? NEED DIMENSIONS FOR PANEL PARTS, PLACEMENT AND LETTERING INFORMATION. ROSS SMITH, 1133 STRONG AVENUE, ELKHART, IN 46514.

The Antique Radio Club of Illinois

proudly announces



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For more information write:
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P.O. Box 14732, Chicago, IL 60614

COLLECTION FOR SALE

COLLECTION FOR SALE

RCA model CT-100, 15" color TV, 1954, mahogany floor model, 37 tube, completely restored cabinet and electronics, $3,750.00

Farnsworth model 651-P, 10" B/W, 1948, walnut table model, 29 tube, completely restored cabinet and electronics, $1.200.00

Scott Radio Labs. model 6-T-11, 1948, projection B/W TV, mahogany table model, 34-tube, completely restored and electronics, $975.00

RCA model 8PCS41, projection B/W TV, 1948, walnut floor model, 41 tube , completely restored electronics, cabinet in good condition, $1,200.00

RCA model 8TS30, 10" B/W TV, 1948, walnut table model, 30 tube, completely restored cabinet and electronics, $550.00

Motorola model VT-71M, 7" B/W TV, 1948, mahogany table model, 18 tube, completely restored cabinet and electronics, $350.00

RCA model 721TS, 10" B/W TV, 1947, walnut table model, 21-tube, unrestored, cabinet in good condition, $225.00

RCA model 630TS, 10" B/W tv, 1946, walnut table model, 30 tube, unrestored, cabinet in good condition, $300.00 (works OK)

RCA model 621TS, 7" B/W TV, 1947, painted table model, 21 tube, unrestored, cabinet in fair condition, $300.00

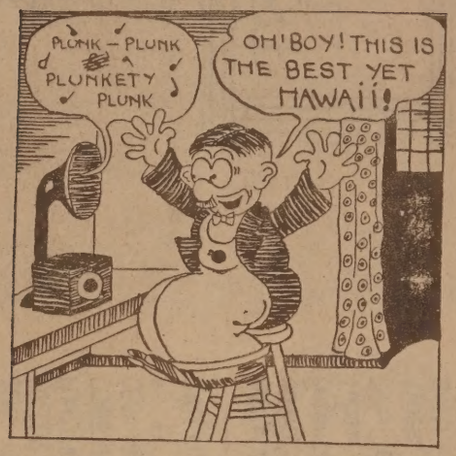
Edison Diamond Disc, Official laboratory model, phonograph, 1918, mahogany floor model, good condition, $600.00 with over 100 discs.

Shipping not included in price
—— $8,000.00 TAKES ALL ——
Bill Russell, 7162 Marymount Way, Goleta, CA 93117
———— (805) 968-8275 ————

THE HORN SPEAKER

1986

MR. DX HOUND



1925

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**5587 *73*
ART B CORELUS
5704 11TH AVE NW
SEATTLE WA -98107